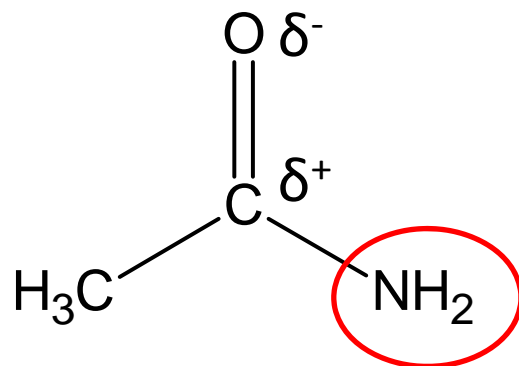


# Amides

What intermolecular forces do you think amides have?

How will these intermolecular forces affect their:

- Melting and boiling points compared to alkanes
- Solubility in water

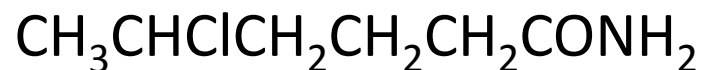
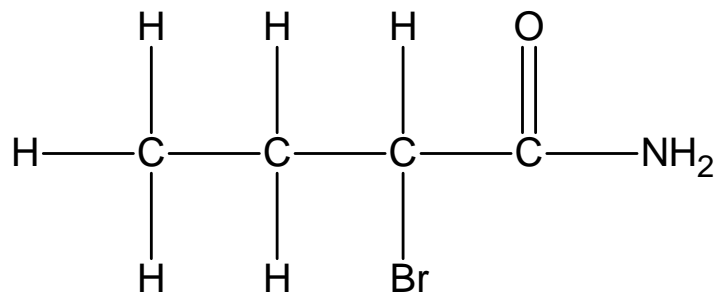


Dipole-dipole intermolecular forces and hydrogen bonding.

# Naming amides

Amides are named with the suffix –anamide. Make sure not to confuse amines and amides!!

Name and draw the following carboxylic acids:



propanamide

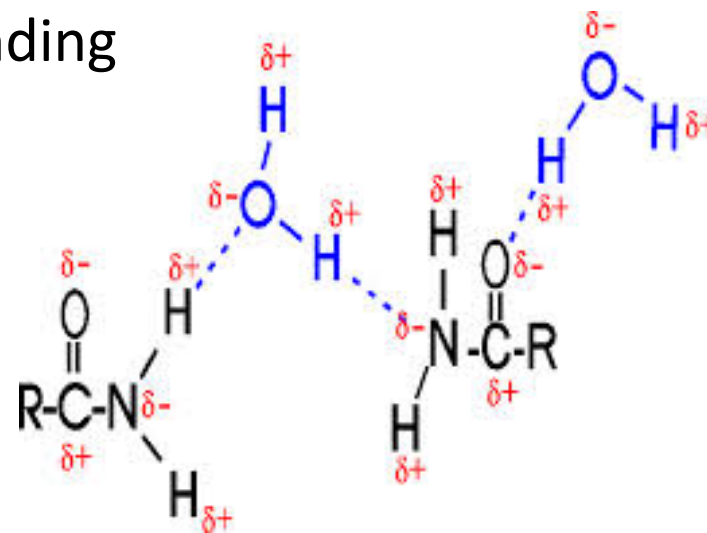
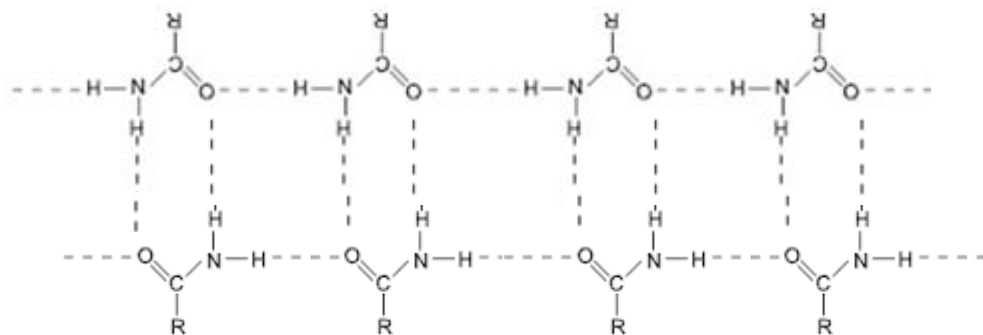
3,3-dichloropentanamide

# Physical properties of amides

Generally amides with short carbon chains are soluble in water (can hydrogen bond)

High boiling points due to hydrogen bonding

Hydrogen bonding between amides



Hydrogen bonding between amides and water

Amides are not as basic as amines. They will not turn red litmus blue. This is a good way to tell amines and amides apart.

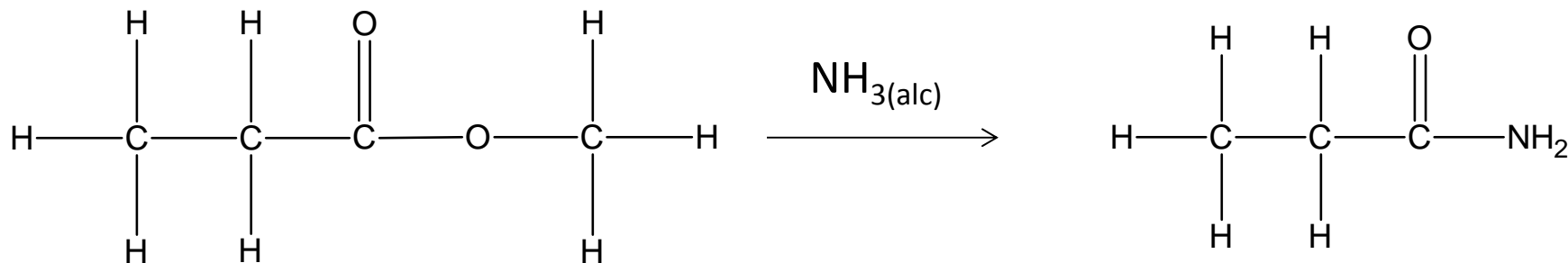
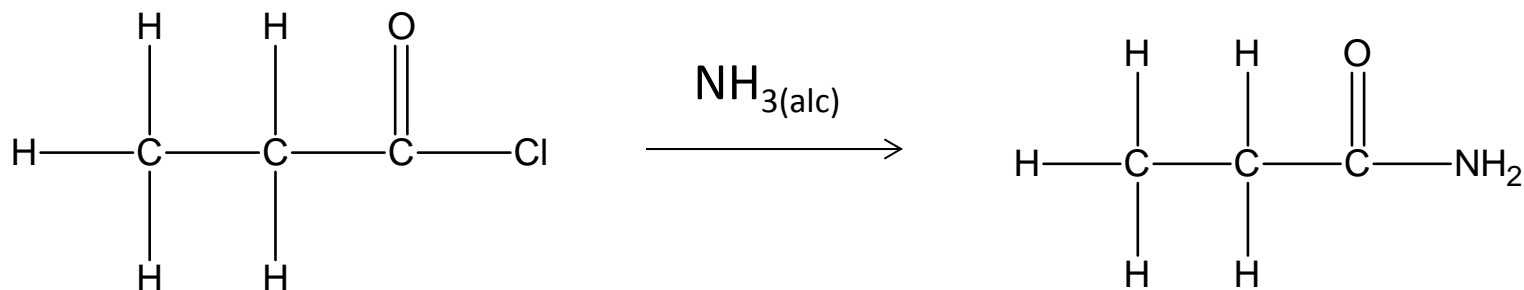
# Making amides

Amides can be made by ...

The reaction of an acid chloride with alcoholic ammonia

The reaction of an ester with alcoholic ammonia

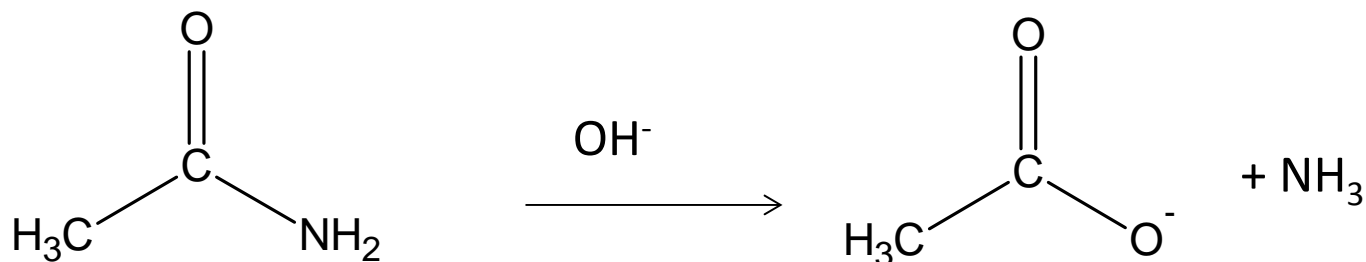
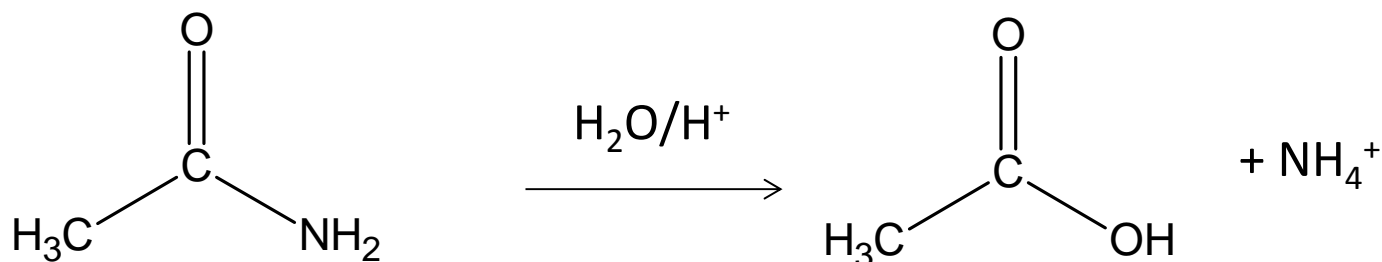
The reaction of a carboxylic acid with ammonium carbonate (not the best/easiest way)



# Reactions of amides

Amides are not basic.

Just like the hydrolysis of esters amides react with water in both acidic and basic conditions to form a carboxylic acid or a carboxylate ion.



Write equations for the reactions of butanamide and propanamide under acidic and basic conditions.